

## REMARKS

### I. Introduction

With the addition of new claims 29 to 31, claims 14 to 31 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

### II. Rejection of Claims 14 and 16 to 19 Under 35 U.S.C. § 103(a)

Claims 14, 16 to 19 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of “Highly Selective Etching of Si<sub>3</sub>N<sub>4</sub> to SiO<sub>2</sub> Employing Fluorine and Chlorine Atoms Generated by Microwave Discharge” (“Suto et al.”) and U.S. Patent Application Publication No. 2001/0007275 (“Yanagisawa et al.”), as allegedly evidenced by U.S. Patent No. 3,354,646 (“Walter et al.”). It is respectfully submitted that the combination of Suto et al., Yanagisawa et al., and Walter et al. does not render unpatentable these claims for at least the following reasons.

As an initial matter, Applicant respectfully maintains the traversal of any and all assertions of inherency contained in the Office Action. As regards the alleged inherency of chlorine trifluoride in the apparatus of Suto et al., the apparatus and base gases disclosed in Walter et al. differ substantially from the disclosure of Suto et al. Thus, the purported generation of chlorine trifluoride in Walter et al. does not in any manner establish or support any contention that chlorine trifluoride would necessarily be generated under the conditions disclosed in Suto et al. Nonetheless, the present rejection is deficient for at least the following additional reasons.

Although Applicant may not agree with the merits of the present rejection, but to facilitate prosecution, claim 14 has been amended herein without prejudice to recite that the gas supply means includes a first mass flow regulator configured to regulate the first gas to a first flow rate to the plasma reactor, and a second mass flow regulator configured to regulate the second gas to a second flow rate to the plasma reactor, wherein the first flow regulator and the second flow regulator are configured to regulate the respective first and second flow rates to provide an ideal stoichiometric conversion of the first gas and the second gas to chlorine trifluoride. Support for this amendment may be found, for example, at page

9, line 14 to page 10, line 4. Claim 18 has been amended herein without prejudice to accord with amended claim 14.

Even if it is assumed, *arguendo*, that the apparatus of Suto et al. produced some trace of chlorine trifluoride—which Applicant does not concede—Suto et al. does not disclose, or even suggest, first and second mass flow regulators configured to regulate respective flows of the first and second gases to provide an ideal stoichiometric conversion of the first gas and the second gas to chlorine trifluoride, as recited in amended claim 14. Indeed, there would be no apparent reason whatsoever to modify the respective flow rates for NF<sub>3</sub> and CL<sub>2</sub> in Suto et al. to achieve an ideal stoichiometric conversion to chlorine trifluoride. In this regard, Suto et al. is concerned with the selective etching of Si<sub>3</sub>N<sub>4</sub> over SiO<sub>2</sub> by providing FCl molecules, which easily dissociate on the Si<sub>3</sub>N<sub>4</sub> surface, resulting in F and Cl atoms, which act to etch the Si<sub>3</sub>N<sub>4</sub> surface. Page 2034. Thus, even if the apparatus of Suto et al. were capable of producing chlorine trifluoride, there would be no apparent reason to do so, much less provide flow regulators configured to provide respective gas flows for the first and second gases that result an ideal stoichiometric conversion to chlorine trifluoride, as recited in amended claim 14. Neither Yanagisawa et al. nor Walter et al. cures this deficiency.

In view of the foregoing, it is respectfully submitted that the combination of Suto et al., Yanagisawa et al., and Walter et al. does not disclose or suggest all of the features of claim 14. As such, it is respectfully submitted that the combination of Suto et al., Yanagisawa et al., and Walter et al. does not render unpatentable claim 14 or any of claims 16 to 19, which depend from claim 14.

Further regarding claim 19, the Office Action states at page 6 that “claim limitation pertaining to generation of gaseous chlorine trifluoride is an intended use limitation, and since the prior art apparatus meets all of the structural limitations of the claim, the same is considered capable of meeting the intended use limitation.” Applicant again notes that this analysis is improper. As set forth in the “Response” submitted on October 16, 2008 and the “Amendment” submitted on August 10, 2009, and reiterated herein, the referenced claim recitation is not an intended use limitation as indicated, and, further, functional limitations must be considered. See M.P.E.P. 2173.05(g) (“A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used.”).

In view of the foregoing, withdrawal of this rejection is respectfully requested.

**III. Rejection of Claim 15 Under 35 U.S.C. § 103(a)**

Claim 15 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Suto et al., Yanagisawa et al., and U.S. Patent No. 5,756,400 (“Ye et al.”). It is respectfully submitted that the combination of Suto et al., Yanagisawa et al., and Ye et al. does not render unpatentable claim 15 for at least the following reasons.

Claim 15 depends from claim 14 and therefore includes all of the features recited in claim 14. As indicated above, the combination of Suto et al. and Yanagisawa et al. does not disclose or suggest all of the features recited in claim 14. Ye et al. is not relied upon as disclosing the features of claim 14 not disclosed or suggested by the combination of Suto et al. and Yanagisawa et al. Indeed, Ye et al. does not disclose, or even suggest, the features of claim 14 not disclosed or suggested by the combination of Suto et al. and Yanagisawa et al.

As indicated above, the combination of Suto et al., Yanagisawa et al., and Ye et al. does not disclose or suggest all of the features of claim 15. As such, it is respectfully submitted that the combination of Suto et al., Yanagisawa et al. and Ye et al. does not render unpatentable claim 15.

In view of the foregoing, withdrawal of this rejection is respectfully requested.

**IV. Rejection of Claims 20 to 22 Under 35 U.S.C. § 103(a)**

Claims 20 to 22 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Suto et al., Yanagisawa et al., and Walter et al. It is respectfully submitted that the combination of Suto et al., Yanagisawa et al., and Walter et al. does not render unpatentable these claims for at least the following reasons.

As an initial matter, as more fully set forth above, Applicant respectfully maintains the traversal of any and all assertions of inherency contained in the Office Action, including the assertion at page 8 regarding the alleged generation of chlorine trifluoride in the system of Suto et al. Nonetheless, the present rejection is deficient for at least the following additional reasons.

Although Applicant may not agree with the merits of the present rejection, but to facilitate prosecution, claim 20 has been amended herein without prejudice to recite that a ratio of the amount of the first gas and an amount of the second gas is selected to achieve an ideal stoichiometric conversion to chlorine trifluoride. Support for this amendment may be found, for example, at page 9, line 14 to page 10, line 4.

As more fully set forth above with respect to claim 14, the combination of Suto et al., Yanagisawa et al., and Walter et al. does not disclose, or even suggest, regulation of gas flows of first and second gases to provide an ideal stoichiometric conversion of the first gas and the second gas to chlorine trifluoride. Thus, the combination of Suto et al., Yanagisawa et al., and Walter et al. also does not disclose, or even suggest, a method that includes providing first and second gases with a ratio of the amount of the first gas and the second gas being selected to achieve an ideal stoichiometric conversion to chlorine trifluoride, as recited in claim 20.

As indicated above, the combination of Suto et al., Yanagisawa et al., and Ye et al. does not disclose or suggest all of the features of claim 20. As such, it is respectfully submitted that the combination of Suto et al., Yanagisawa et al. and Walter et al. does not render unpatentable claim 20, or either of claims 21 and 22, which depend from claim 20.

In view of the foregoing, withdrawal of this rejection is respectfully requested.

## **V. Rejection of Claims 23 and 26 Under 35 U.S.C. § 103(a)**

Claims 23 and 26 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Suto et al., Yanagisawa et al., Walter et al., and U.S. Patent No. 6,136,214 (“Mori et al.”). It is respectfully submitted that the combination of Suto et al., Yanagisawa et al., Walter et al., and Mori et al. does not render unpatentable these claims for at least the following reasons.

Claims 23 and 26 depend from claim 20 and therefore include all of the features recited in claim 20. As more fully set forth above, the combination of Suto et al., Yanagisawa et al., and Walter et al. does not disclose, or even suggest, all of the features recited in claim 20. Mori et al. is not relied upon for disclosing or suggesting the features of claim 20 not disclosed or suggested by the combination of

Suto et al., Yanagisawa et al., and Walter et al. Indeed, Mori et al. does not disclose, or even suggest, the features of claim 20 not disclosed or suggested by the combination of Suto et al., Yanagisawa et al., and Walter et al.

In view of the foregoing, it is respectfully submitted that the combination of Suto et al., Yanagisawa et al., Walter et al., and Mori et al. does not render unpatentable claims 23 and 26. Accordingly, withdrawal of the present rejection is respectfully requested.

#### **VI. Rejection of Claim 24 Under 35 U.S.C. § 103(a)**

Claim 24 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Suto et al., Yanagisawa et al., Walter et al., and U.S. Patent No. 6,953,557 (“Ikeda et al.”). It is respectfully submitted that the combination of Suto et al., Yanagisawa et al., Walter et al., and Ikeda et al. does not render unpatentable claim 24 for at least the following reasons.

Claim 24 depends from claim 20 and therefore includes all of the features recited in claim 20. As more fully set forth above, the combination of Suto et al., Yanagisawa et al., and Walter does not disclose, or even suggest, all of the features recited in claim 20. Ikeda et al. is not relied upon for disclosing or suggesting the features of claim 20 not disclosed or suggested by the combination of Suto et al., Yanagisawa et al., and Walter et al. Indeed, Ikeda et al. does not disclose, or even suggest, the features of claim 20 not disclosed or suggested by the combination of Suto et al., Yanagisawa et al., and Walter et al.

In view of the foregoing, it is respectfully submitted that the combination of Suto et al., Yanagisawa et al., Walter et al., and Ikeda et al. does not render unpatentable claim 24. Accordingly, withdrawal of the present rejection is respectfully requested.

#### **VII. Rejection of Claim 25 Under 35 U.S.C. § 103(a)**

Claim 25 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Suto et al., Yanagisawa et al., Walter et al., and Ye et al. It is respectfully submitted that the combination of Suto et al., Yanagisawa et al., Walter et al., and Ye et al. does not render unpatentable claim 25 for at least the following reasons.

Claim 25 depends from claim 20 and therefore includes all of the features recited in claim 20. As indicated above, the combination of Suto et al., Yanagisawa et al., and Walter et al. does not disclose or suggest all of the features recited in claim 20. Ye et al. is not relied upon as disclosing the features of claim 20 not disclosed or suggested by the combination of Suto et al., Yanagisawa et al., and Walter et al. Indeed, Ye et al. does not disclose, or even suggest, the features of claim 20 not disclosed or suggested by the combination of Suto et al., Yanagisawa et al., and Walter et al.

As indicated above, the combination of Suto et al., Yanagisawa et al., Walter et al., and Ye et al. does not disclose or suggest all of the features of claim 25. As such, it is respectfully submitted that the combination of Suto et al., Yanagisawa et al., Walter et al., and Ye et al. does not render unpatentable claim 25.

In view of the foregoing, withdrawal of this rejection is respectfully requested.

### **VIII. Rejection of Claim 27 Under 35 U.S.C. § 103(a)**

Claim 27 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Suto et al. and Walter et al. It is respectfully submitted that the combination of Suto et al. and Walter et al. does not render unpatentable claim 27 for at least the following reasons.

As an initial matter, claim 27 has been amended herein without prejudice to correct a typographical error, changing “to forming” to --to form--. No new matter has been added.

As another initial matter, as more fully set forth above, Applicant respectfully maintains the traversal of any and all assertions of inherency contained in the Office Action, including the assertion at page 13 regarding the alleged generation of chlorine trifluoride in the system of Suto et al. Nonetheless, the present rejection is deficient for at least the following additional reasons.

Claim 27 relates to a method of generating chlorine trifluoride. Claim 27 recites that the method includes: generating a high-density plasma in a plasma reactor; supplying to the plasma reactor a first gas according to a first gas flow rate; and supplying to the plasma reactor a second gas according to a second gas flow rate. Claim 27 further recites that the first gas and the second gas react with one another under the influence of the high-density plasma to form chlorine trifluoride in

the plasma reactor, and a ratio of the first gas flow to the second gas flow is selected to achieve an ideal stoichiometric conversion to chlorine trifluoride.

As more fully set forth above with respect to claim 14, the combination of Suto et al. and Walter et al. does not disclose, or even suggest, regulation of gas flows of first and second gases to provide an ideal stoichiometric conversion of the first gas and the second gas to chlorine trifluoride. Thus, the combination of Suto et al. and Walter et al. also does not disclose, or even suggest, a method that includes supplying to a plasma reactor first and section gases with a ratio of the first gas flow to the second gas flow is selected to achieve an ideal stoichiometric conversion to chlorine trifluoride, as recited in claim 27.

As indicated above, the combination of Suto et al. and Walter et al. does not disclose or suggest all of the features of claim 27. As such, it is respectfully submitted that the combination of Suto et al. and Walter et al. does not render unpatentable claim 27.

Further, Applicant disagrees with the assertion at page 13 of the Office Action that “[i]t would be obvious to select the ratio of the first gas flow to the second gas flow to achieve an ideal stoichiometric conversion to chlorine trifluoride” in view of Walter et al. Firstly, there is no apparent reason to achieve an ideal stoichiometric conversion to chlorine trifluoride in either of Suto et al. or Walker et al. Indeed, chlorine trifluoride is described as one of several by-products from which the desired chlorine pentafluoride separated. See col. 1, lines 53 to 58. Moreover, Walter et al. teaches that “the concentrations of [fluorine and chlorine] atoms should be such that the fluorine is present at least in stoichiometrical amounts for the production of ClF<sub>5</sub>, and preferable there should be an excess of fluorine” (emphasis added), thereby teaching away from providing an ideal stoichiometric conversion to chlorine trifluoride. Thus, the present rejection is deficient for at least this additional reason.

In view of the foregoing, withdrawal of this rejection is respectfully requested.

## **IX. Rejection of Claim 28 Under 35 U.S.C. § 103(a)**

Claim 28 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Suto et al., Walter et al., and U.S. Patent No. 5,641,380 (“Yamazaki et al.”). It is respectfully submitted that the combination of Suto et al.,

Walter et al., and Yamazaki et al. does not render unpatentable claim 28 for at least the following reasons.

Claim 28 depends from claim 27 and therefore includes all of the features recited in claim 27. As more fully set forth above, the combination of Suto et al. and Walter et al. does not disclose, or even suggest, all of the features recited in claim 27. Yamazaki et al. is not relied upon as disclosing the features of claim 27 not disclosed or suggested by the combination of Suto et al. and Walter et al. Indeed, Yamazaki et al. does not disclose, or even suggest, the features of claim 27 not disclosed or suggested by the combination of Suto et al. and Walter et al.

As indicated above, the combination of Suto et al., Walter et al., and Yamazaki et al. does not disclose or suggest all of the features of claim 28. As such, it is respectfully submitted that the combination of Suto et al., Walter et al., and Yamazaki et al. does not render unpatentable claim 28.

In view of the foregoing, withdrawal of this rejection is respectfully requested.

#### **X. New Claims 29 to 31**

New claims 29 to 31 have been added. It is respectfully submitted that new claims 29 to 31 add no new matter and is fully supported by the present application, including the Specification.

It is respectfully submitted that new claims 29 to 31 are patentable over the references relied upon for reasons analogous to those set forth above with regard to claims 14 to 28.

**XI. Conclusion**

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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